Better Buildings Residential Network Peer Exchange Call Series:

Residential Energy Efficiency Programs and Homeowners Now: Six Months Later

August 13, 2020

Agenda and Ground Rules

- Agenda Review and Ground Rules
- Opening Poll
- Residential Network Overview and Upcoming Call Schedule
- Featured Speakers:
  - **Jacob Corvidae**, Rocky Mountain Institute
  - **Charlie Gohman**, AZ Home Performance with ENERGY STAR
  - **Maddie Koewler**, National Association of State Energy Officials
- Open Discussion
- Closing Poll and Announcements

Ground Rules:

1. **Sales of services and commercial messages are not appropriate** during Peer Exchange Calls.
2. Calls are a safe place for discussion; **please do not attribute information to individuals** on the call.

The views expressed by speakers are their own, and do not reflect those of the Dept. of Energy.

Better Buildings Residential Network

Join the Network

Member Benefits:

- Recognition in media and publications
- Speaking opportunities
- Updates on latest trends
- Voluntary member initiatives
- One-on-One brainstorming conversations

Commitment:

- Members only need to provide *one number*: their organization's number of residential energy upgrades per year, or equivalent.

Upcoming Calls (2nd & 4th Thursdays):

- Sept. 10: TBD
- Sept. 24: TBD

Peer Exchange Call summaries are posted on the Better Buildings website a few weeks after the call

For more information or to join, for no cost, email bbresidentialnetwork@ee.doe.gov, or go to energy.gov/eere/bbrn & click Join

Jacob Corvidae

Rocky Mountain Institute

U.S. DEPARTMENT OF ENERGY

AUGUST 13, 2020

Home Energy & COVID

Better Buildings Residential Network

COVID: First the Bad News

15% Clean energy jobs lost

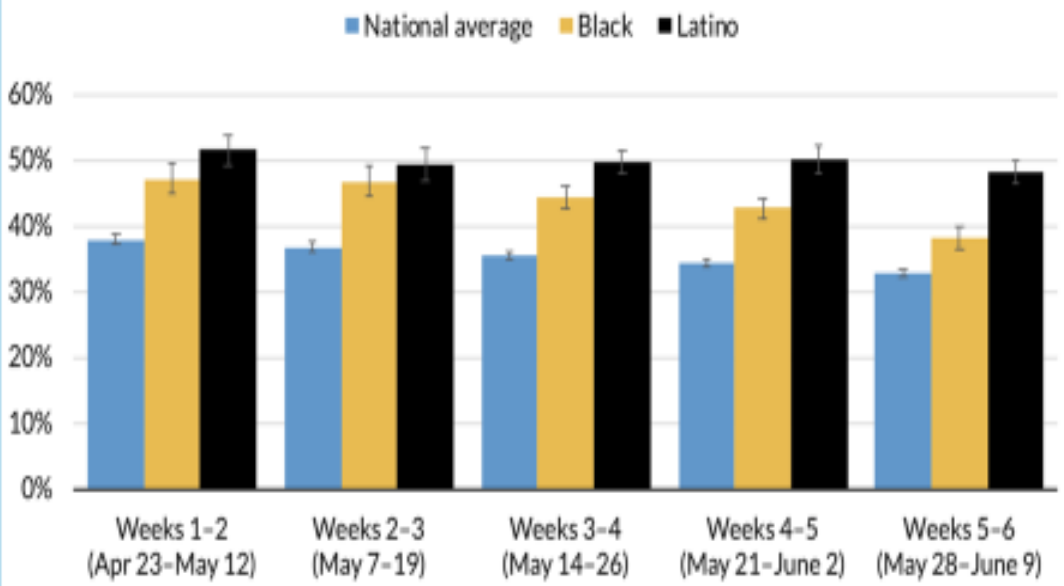
>500,000 Clean energy workers out of work

Source: E4TheFuture

And who's hit the hardest?

Expected Employment Income Loss by Race and Ethnicity

Share of adults in households where at least one person expects to lose employment income in the next four weeks



Source: Urban Institute calculations from the Racial Equity Analytics Lab's COVID-19 racial equity recovery tracker, based on the US Census Bureau's Household Pulse Survey.
Note: Because of small survey sample sizes, these averages are imprecisely estimated with large margins of error. To illustrate that uncertainity, we've shown margin of error for each data point.

URBAN INSTITUTE

COVID: Potential for good

01

New innovations

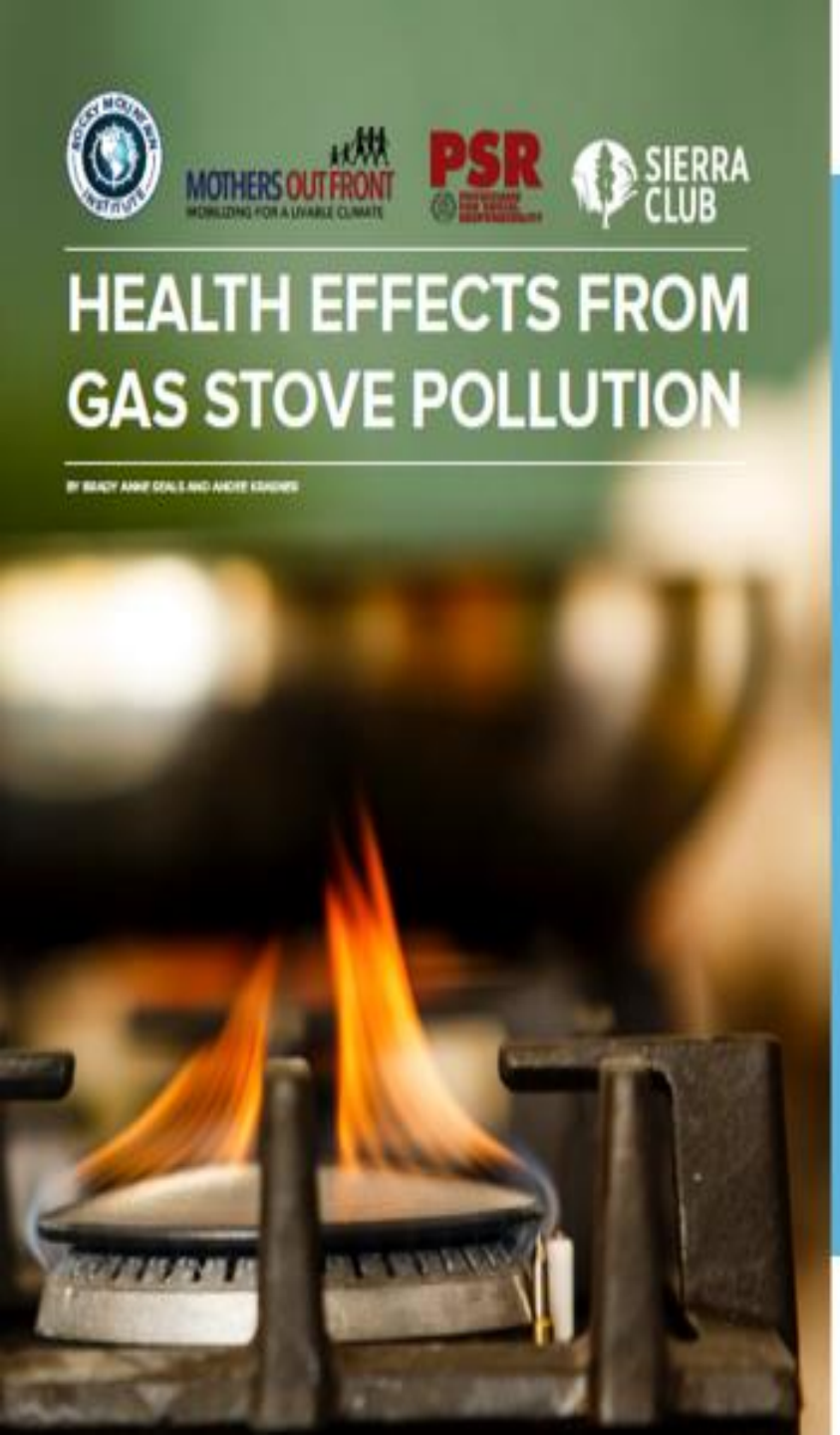
02

New opportunities

Contents


RMI.org:
Video Check-ups for Home Improvement and Resilience

Contents



Children in homes with gas stoves:

42%

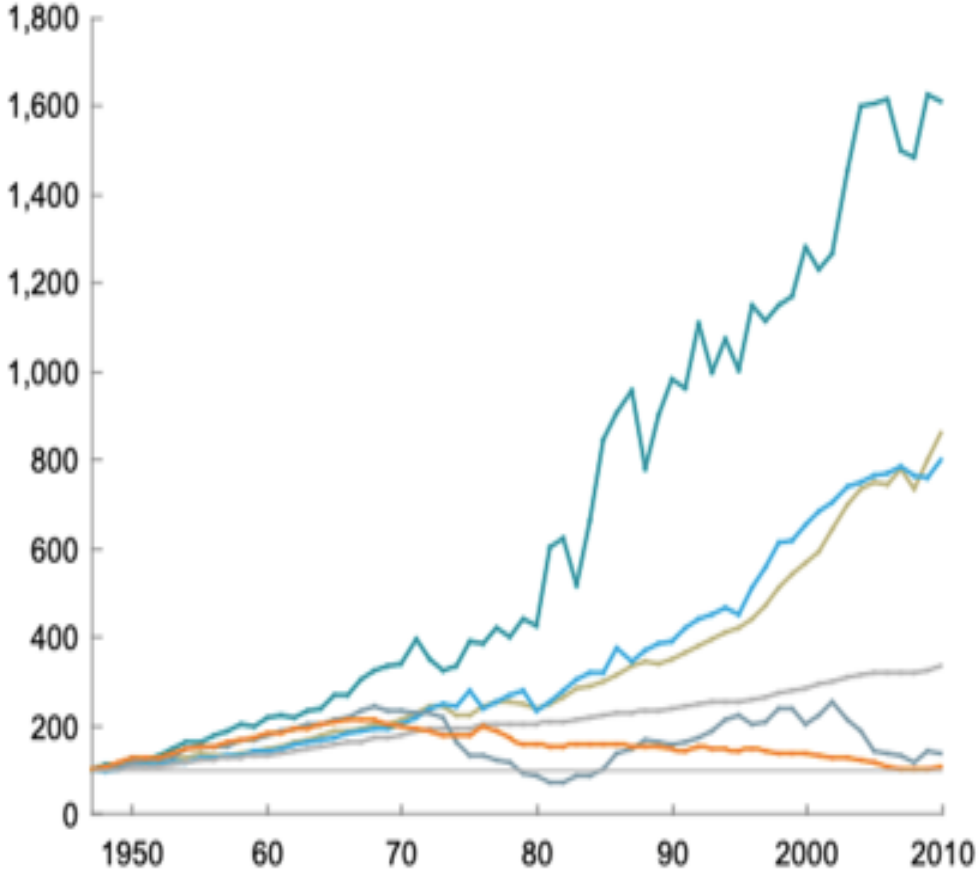
increased risk of experiencing asthma symptoms if they had asthma already

(and if they didn't, then a 24% greater risk of being diagnosed with asthma)

Contents

Construction productivity has been flat over 60 years...

Gross value added per hour worked, constant prices
Index: 100 = 1947



	Compound annual growth rate, 1947–2010 %	Total change
Agriculture	4.5	16.1x
Manufacturing	3.5	8.6x
Wholesale and retail	3.4	8.0x
Overall economy	1.9	3.3x
Mining	0.5	1.4x
Construction	0.1	1.1x

Source: McKinsey and Company: Reinventing Construction, A Route to Higher Productivity

DOE's Advanced Building Construction (ABC) Collaborative

Source: energiesprong.org

Contents


Towards an Accessible Financing Solution
A POLICY ROADMAP WITH PROGRAM IMPLEMENTATION CONSIDERATIONS FOR TARIFFED ON-BILL PROGRAMS IN CALIFORNIA
JULY 2020
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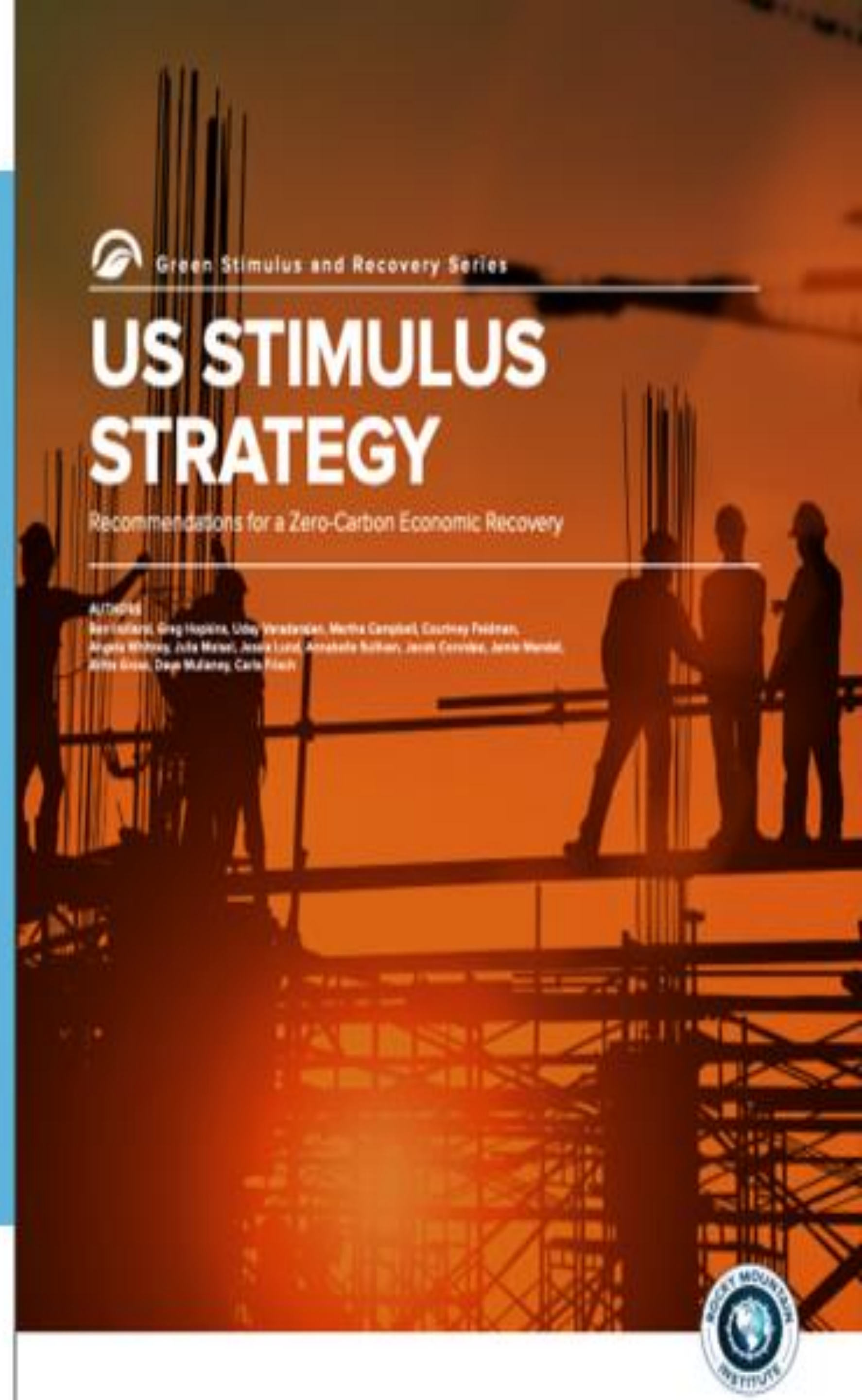
Building Decarbonization Coalition
REPORT AUTHORS:
BUILDING DECARBONIZATION COALITION


Green Stimulus and Recovery Series
US STIMULUS STRATEGY
Recommendations for a Zero-Carbon Economic Recovery

Thank you!

Jacob Corvidae
jcorvidae@rmi.org

Charlie Gohman

Arizona Home Performance with ENERGY STAR

U.S. DEPARTMENT OF ENERGY

Arizona Home Performance Plus

- Charlie Gohman
- Manager – AZ Home Performance

AZ Home Performance with ENERGY STAR

Why Plus

- Arizona Public Service announces a goal to deliver 100 percent clean, carbon-free electricity to customers by 2050
- For utilities to be successful they must address the duck curve
  - Price of energy focuses on carbon
  - It's not KWH, it's carbon
  - Time of day/demand rates to incentivize shifting usage/demand to low carbon times
    - Rate available where during winter days the energy provided is free, only cost is distribution cost.
    - Caused by negative power prices

AZ Home Performance with ENERGY STAR

HP Plus – Energy Efficiency Plus Smart Energy Management

- The Home Performance PLUS contractor will help clients:
  - Assess the energy performance of your home
    - Energy efficiency and energy management opportunities
  - Install the right package of upgrades to fit your lifestyle and budget
  - Assist you in choosing the utility service plan that is right for you
  - Set up everything to optimize your home's performance with no hassle
  - Follow up to assure that you are satisfied

AZ Home Performance with ENERGY STAR

What is New

- Marketing/training related to the concept behind HP Plus
  - Combining EE and load management
  - Importance of when electricity is used
    - Cost
    - Climate
  - Support/training with load management measures

What is New

- Optimiser upgrade allow contractors to analysis EE and energy management options
  - Detailed review of impact of different rates available
    - Upload client utility usage
    - Optimiser has incorporated APS rate structures into program
      - Very easy to review usage/different rate plan impact
  - Impact of energy upgrades, energy management strategies on energy usage and cost under the various rate plans
    - Model energy efficient measure and load management options together

AZ Home Performance with ENERGY STAR

Heat map – 24 hour/365-day data with peak demand – how energy is used

Date	0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Off Peak	On Peak	Demand	Total
7/1/2018	2.2	1.8	1.5	1.4	1.4	1.3	0.7	1.3	1.4	1.8	1.7	2.3	2.4	2.4	2.5	2.7	4.1	3.1	2.8	2.4	1.9	1.8	1.8	2.8	$ 5.39			$ 5.39
7/2/2018	1.9	1.7	1.4	1.3	1.1	1.2	1.2	1.3	1.4	1.7	2.2	2.9	3.5	3.1	2.8	2.5	2.9	3.1	3.3	4.1	3.4	0.9	1.4	2.7	$ 4.00	$ 3.89		$ 7.88
7/3/2018	2.0	1.9	1.1	0.8	1.1	1.1	0.9	1.4	2.0	4.0	1.4	2.4	2.7	3.3	3.4	3.3	3.1	2.5	3.1	3.6	3.8	3.6	4.4	2.6	$ 4.76	$ 3.78		$ 8.55
7/4/2018	1.7	1.5	1.4	1.5	1.5	1.5	1.5	1.6	2.0	2.9	3.4	3.8	3.9	3.3	3.5	3.6	3.8	1.9	2.3	2.9	2.4	1.9	2.0	2.0	$ 6.29			$ 6.29
7/5/2018	1.5	1.7	1.7	1.2	1.3	1.3	1.3	1.8	1.9	3.1	4.1	4.2	4.2	4.2	4.1	4.0	0.8	1.0	2.1	4.7	4.1	3.9	2.1	0.6	$ 5.25	$ 3.06		$ 8.30
7/6/2018	0.6	0.6	3.8	3.7	3.0	2.4	1.0	1.0	2.6	3.6	4.2	4.1	4.0	4.0	3.8	4.1	4.1	2.1	0.9	4.0	3.7	3.3	3.2	3.3	$ 6.07	$ 3.69		$ 9.76
7/7/2018	2.6	2.4	2.3	2.2	2.2	2.2	0.9	0.7	1.9	2.1	3.4	4.4	4.2	4.1	5.2	4.7	4.2	2.2	1.6	3.3	4.7	4.5	3.3	3.2	$ 7.88			$ 7.88
7/8/2018	2.6	2.3	2.0	0.6	1.1	1.3	0.7	0.7	4.1	4.2	3.6	2.6	0.8	0.7	0.6	2.0	4.4	4.3	4.5	4.7	4.1	0.5	3.3	3.2	$ 6.37			$ 6.37
7/9/2018	0.6	0.6	3.8	3.7	1.3	4.0	4.0	3.5	3.3	3.6	3.7	3.4	3.7	4.1	3.7	4.0	4.3	3.4	0.6	1.3	2.0	2.2	1.4	2.8	$ 6.02	$ 3.28		$ 9.30
7/10/2018	1.6	1.3	1.4	1.4	1.1	1.1	1.1	1.7	1.8	2.0	3.0	3.7	1.6	1.1	1.7	2.1	2.4	2.8	2.5	3.3	2.8	2.2	3.1	1.0	$ 3.76	$ 3.18		$ 6.94
7/11/2018	0.5	0.5	0.6	3.1	2.2	1.7	1.0	0.6	1.3	1.8	2.0	3.8	2.7	3.9	3.1	2.7	2.9	2.3	2.4	2.2	4.5	6.1	1.7	1.2	$ 4.61	$ 3.05		$ 7.66
7/12/2018	1.5	1.5	1.4	1.3	1.5	1.5	1.5	3.2	3.9	3.5	3.8	3.6	3.8	3.5	4.0	5.0	4.2	2.4	0.9	1.3	2.0	1.9	1.2	1.1	$ 4.95	$ 3.34		$ 8.28
7/13/2018	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.6	1.4	2.1	2.5	4.1	4.1	3.6	3.5	3.4	4.3	1.9	0.5	3.8	3.1	2.8	3.1	2.4	$ 4.53	$ 3.40		$ 7.93
7/14/2018	2.2	2.1	1.8	1.7	1.5	1.5	0.7	0.8	1.7	4.1	4.0	3.2	3.6	3.7	3.7	3.7	3.0	2.2	3.3	3.0	2.8	2.1	1.8	1.8	$ 6.51			$ 6.51
7/15/2018	0.4	0.4	1.1	1.2	1.1	1.2	1.1	1.2	1.1	1.1	2.0	1.9	2.3	2.2	2.3	2.3	2.2	2.0	1.8	1.9	1.9	1.7	1.5	1.7	$ 4.06			$ 4.06
7/16/2018	1.2	1.4	1.1	1.1	1.0	1.1	1.3	4.0	1.8	1.5	3.8	2.0	2.7	4.6	3.2	2.6	3.5	3.0	2.7	2.4	2.8	2.8	2.4	2.8	$ 4.62	$ 3.45		$ 8.07
7/17/2018	3.7	2.9	1.5	0.4	1.3	1.2	0.8	0.8	1.4	3.0	3.5	3.9	3.5	4.4	4.3	4.2	3.7	1.7	4.0	3.8	2.8	3.8	3.0	1.6	$ 6.17	$ 4.22		$ 9.39
7/18/2018	3.3	2.5	1.9	1.7	1.8	1.9	0.9	0.5	1.5	2.2	4.1	4.1	4.2	4.4	4.2	4.3	4.3	3.5	4.0	3.6	4.0	2.6	2.7	2.8	$ 5.57	$ 4.79		$ 10.36
7/19/2018	2.6	2.5	2.4	2.1	1.8	1.6	0.5	0.9	1.7	2.4	4.0	4.0	4.1	4.1	4.1	4.2	4.1	1.9	1.7	4.3	3.5	2.9	2.0	2.6	$ 5.39	$ 3.92		$ 9.31
7/20/2018	2.1	2.1	0.6	0.6	0.6	0.8	0.7	1.9	3.8	3.3	3.1	3.3	3.0	4.3	3.8	3.4	3.6	2.8	3.1	2.9	3.1	2.5	2.7	2.5	$ 4.86	$ 3.83		$ 8.69
7/21/2018	2.1	3.4	3.4	3.0	3.0	3.8	1.2	0.5	0.5	1.2	1.2	1.7	1.7	1.8	1.6	2.0	2.4	2.3	2.8	3.2	4.0	3.7	3.0	2.3	$ 6.06			$ 6.06
7/22/2018	1.6	0.5	0.5	0.5	0.6	0.5	2.2	1.7	2.1	2.4	2.6	3.5	4.0	3.5	3.5	3.9	4.0	2.8	2.5	2.8	4.1	3.2	4.1	1.7	$ 6.40			$ 6.40
7/23/2018	0.7	1.3	1.2	1.4	1.2	1.3	1.3	1.8	3.4	3.0	2.9	3.3	3.0	3.8	3.7	4.1	3.7	2.4	3.8	4.5	3.7	2.9	3.6	3.4	$ 5.11	$ 4.47		$ 9.58
7/24/2018	2.9	2.4	2.1	0.6	2.8	2.1	0.6	1.1	1.8	2.4	2.6	3.8	3.6	3.3	3.0	3.5	3.0	2.8	2.7	2.8	3.6	2.9	2.5	2.5	$ 5.05	$ 3.58		$ 8.63
7/25/2018	2.2	2.3	2.2	1.9	1.9	2.0	1.6	2.1	2.4	2.6	2.6	2.7	2.9	3.4	3.4	4.1	4.1	3.7	4.3	4.7	4.4	6.9	4.8	4.1	$ 6.12	$ 5.05		$ 11.17
7/26/2018	2.7	0.7	0.6	3.7	3.0	2.9	0.9	1.1	3.3	3.2	3.0	4.6	5.0	4.1	3.5	3.6	3.8	3.6	3.3	3.5	2.7	3.0	2.7	2.6	$ 5.76	$ 4.31		$ 10.06
7/27/2018	2.4	2.3	1.9	1.8	2.0	1.6	1.9	1.7	2.4	2.7	3.7	3.8	3.6	4.0	4.4	4.2	3.9	2.7	2.9	2.8	2.8	2.5	2.2	2.7	$ 5.45	$ 4.00		$ 9.45
7/28/2018	2.3	2.2	2.2	2.0	2.1	2.3	2.2	2.0	1.9	2.6	2.6	4.5	3.3	3.8	3.7	3.8	3.4	6.1	4.0	3.1	3.1	2.0	0.8	2.1	$ 7.40			$ 7.40
7/29/2018	1.9	1.8	1.4	1.7	1.2	1.2	1.7	1.4	1.5	1.9	1.9	2.3	2.1	2.4	2.9	3.4	3.3	2.9	3.1	3.6	3.7	3.2	2.3	2.1	$ 5.93			$ 5.93
7/30/2018	1.8	1.7	1.3	1.4	1.8	1.6	1.8	1.8	1.6	2.0	2.4	3.4	4.0	3.2	3.7	3.3	3.5	3.6	3.8	3.0	4.0	4.1	3.0	2.2	$ 6.05	$ 4.17		$ 9.23
7/31/2018	2.8	1.9	1.7	1.9	1.8	1.4	0.9	0.5	1.2	1.8	1.7	2.3	2.8	3.7	3.2	3.2	3.7	2.7	4.4	4.5	3.4	2.8	4.2	2.6	$ 4.61	$ 4.48		$ 9.10
Avg. hourly	1.9	1.7	1.7	1.7	1.6	1.7	1.3	1.5	2.1	2.6	2.9	3.3	3.3	3.4	3.3	3.5	3.5	2.8	2.8	3.3	3.3	2.9	2.6	2.3	$168.98	$ 80.94		$ 249.92

Examples of Load Management

- DHW timers – keeps DHW load out of peak
- Precooling - keeps HVAC load out of peak times
  - Determine degree rise of home
  - 5-hour peak period, 2 degree rise per hour, precooling of 10 degrees needed
- Precooling combined with maintenance cooling
  - Supplement precooling with a planned cooling schedule during peak period

AZ Home Performance with ENERGY STAR

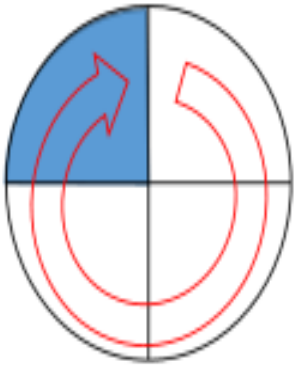
Maintenance Cooling

"Limiting the load recorded at the meter by precisely controlling the runtime of the AC Systems across the peak periods"

AZ Home Performance with ENERGY STAR

15 minutes of demand but 30 minutes of cooling

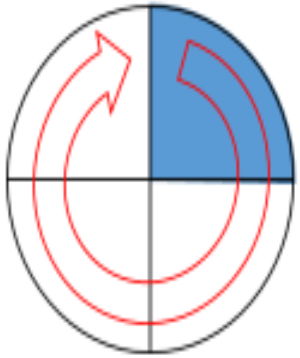
4:45pm to 5pm
AC on



5 KWh X 15 mins
60 mins

=1.25 KWh

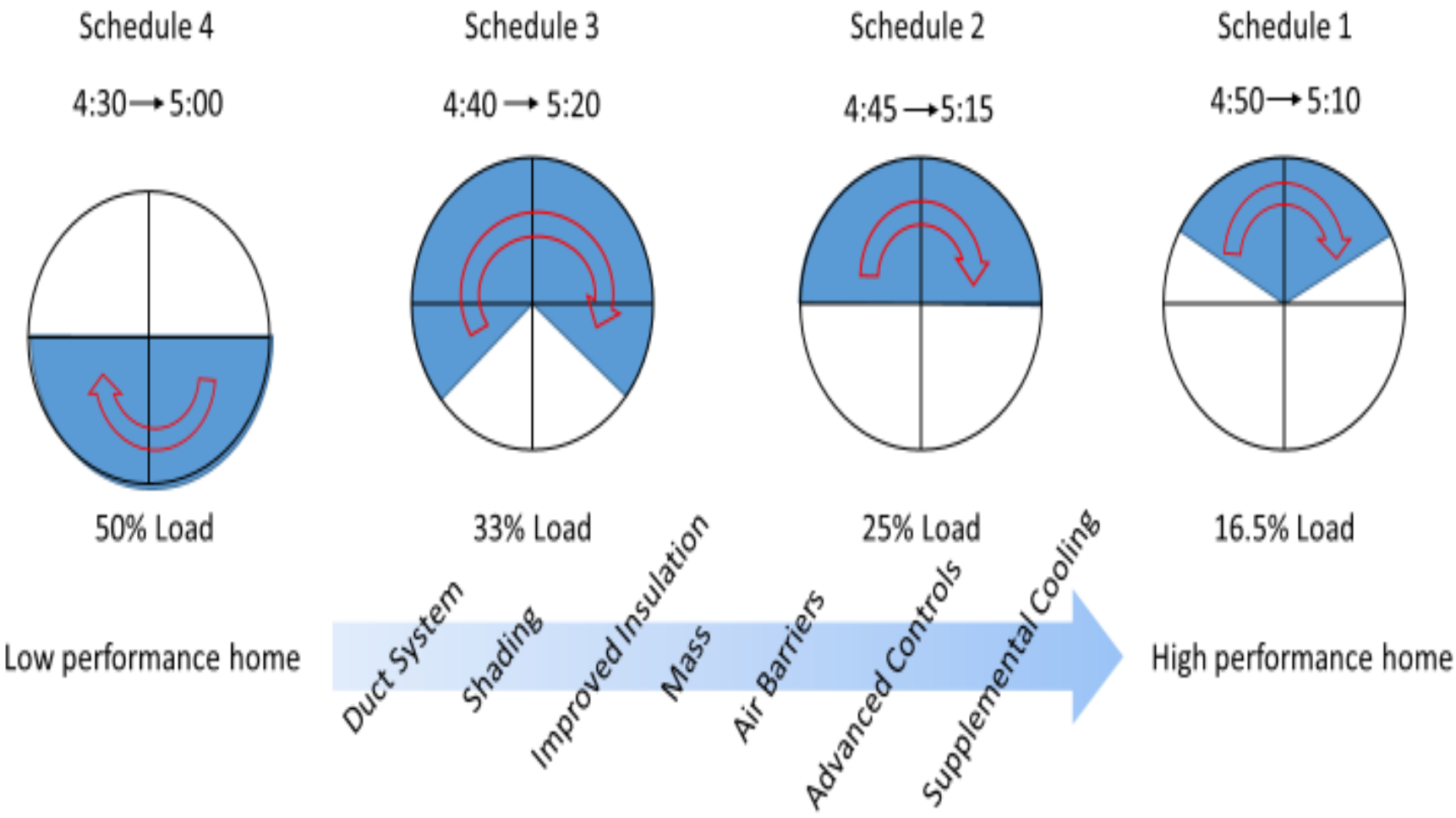
5pm to 5:15pm
AC on



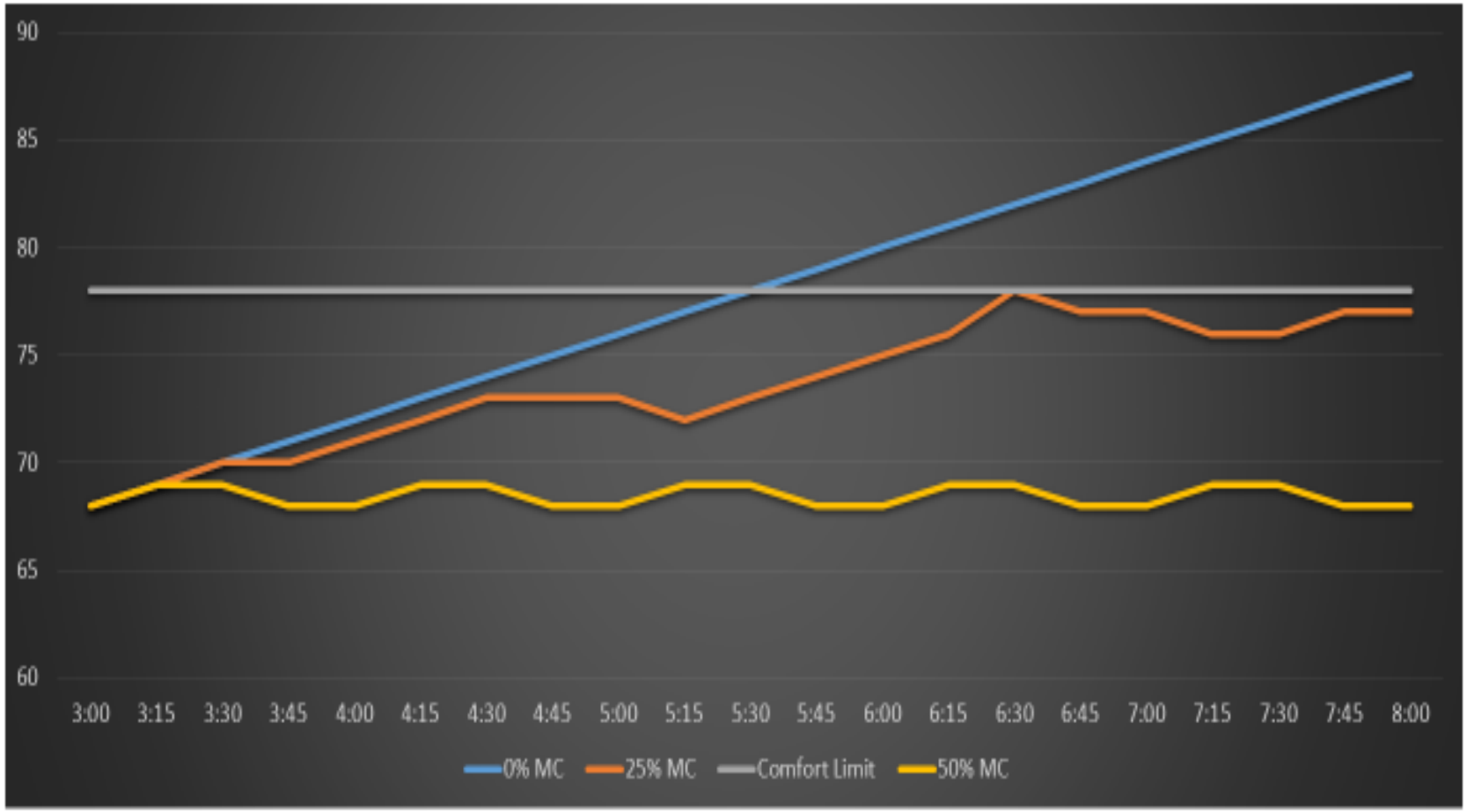
5 KWh X 15 mins
60 mins

=1.25 KWh

AZ Home Performance with ENERGY STAR


Schedule 4
4:30 → 5:00
50% Load
Schedule 3
4:40 → 5:20
33% Load
Schedule 2
4:45 → 5:15
25% Load
Schedule 1
4:50 → 5:10
16.5% Load
Low performance home
Duct System
Shading
Improved Insulation
Mass
Air Barriers
Advanced Controls
Supplemental Cooling
High performance home

Modeling allows HP plus to predict impact of different EE/Energy Management options



Goal

Goal – Based on a home's performance and a client's preferences set up a custom approach to EE and Energy Management

Date	0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Off Peak	On Peak	Demand	Total
7/1/2018	2.2	1.8	1.5	1.4	1.4	1.3	0.7	1.3	1.4	1.8	1.7	2.3	2.4	2.4	2.5	2.7	4.1	3.1	2.8	2.4	1.9	1.8	1.8	2.8	$ 5.39			$ 5.39
7/2/2018	1.9	1.7	1.4	1.3	1.1	1.2	1.2	1.3	1.4	1.7	2.2	2.9	3.5	3.1	2.8	2.5	2.9	3.1	3.3	4.1	3.4	0.9	1.4	2.7	$ 4.00	$ 3.89		$ 7.88
7/3/2018	2.0	1.9	1.1	0.8	1.1	1.1	0.9	1.4	2.0	4.0	1.4	2.4	2.7	3.3	3.4	3.3	3.1	2.5	3.1	3.6	3.8	3.6	4.4	2.6	$ 4.76	$ 3.78		$ 8.55
7/4/2018	1.7	1.5	1.4	1.5	1.5	1.5	1.5	1.6	2.0	2.9	3.4	3.8	3.9	3.3	3.5	3.6	3.8	1.9	2.3	2.9	2.4	1.9	2.0	2.0	$ 6.29			$ 6.29
7/5/2018	1.5	1.7	1.7	1.2	1.3	1.3	1.3	1.8	1.9	3.1	4.1	4.2	4.2	4.2	4.1	4.0	0.8	1.0	2.1	4.7	4.1	3.9	2.1	0.6	$ 5.25	$ 3.06		$ 8.30
7/6/2018	0.6	0.6	3.8	3.7	3.0	2.4	1.0	1.0	2.6	3.6	4.2	4.1	4.0	4.0	3.8	4.1	4.1	2.1	0.9	4.0	3.7	3.3	3.2	3.3	$ 6.07	$ 3.69		$ 9.76
7/7/2018	2.6	2.4	2.3	2.2	2.2	2.2	0.9	0.7	1.9	2.1	3.4	4.4	4.2	4.1	5.2	4.7	4.2	2.2	1.6	3.3	4.7	4.5	3.3	3.2	$ 7.88			$ 7.88
7/8/2018	2.6	2.3	2.0	0.6	1.1	1.3	0.7	0.7	4.1	4.2	3.6	2.6	0.6	0.7	0.6	2.0	4.4	4.3	4.5	4.7	4.1	0.5	3.3	3.2	$ 6.37			$ 6.37
7/9/2018	0.6	0.6	3.8	3.7	1.3	4.0	4.0	3.5	3.3	3.6	3.7	3.4	3.7	4.1	3.7	4.0	4.3	3.4	0.6	1.3	2.0	2.2	1.4	2.8	$ 6.02	$ 3.28		$ 9.30
7/10/2018	1.6	1.3	1.4	1.4	1.1	1.1	1.1	1.7	1.8	2.0	3.0	3.7	1.6	1.1	1.7	2.1	2.4	2.8	2.5	3.3	2.8	2.2	3.1	1.0	$ 3.76	$ 3.18		$ 6.94
7/11/2018	0.5	0.5	0.6	3.1	2.2	1.7	1.0	0.6	1.3	1.8	2.0	3.8	2.7	3.9	3.1	2.7	2.9	2.3	2.4	2.2	4.5	6.1	1.7	1.2	$ 4.61	$ 3.05		$ 7.66
7/12/2018	1.5	1.5	1.4	1.3	1.5	1.5	1.5	3.2	3.9	3.5	3.8	3.6	3.8	3.5	4.0	5.0	4.2	2.4	0.9	1.3	2.0	1.9	1.2	1.1	$ 4.95	$ 3.34		$ 8.28
7/13/2018	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.6	1.4	2.1	2.5	4.1	4.1	3.6	3.5	3.4	4.3	1.9	0.5	3.8	3.1	2.8	3.1	2.4	$ 4.53	$ 3.40		$ 7.93
7/14/2018	2.2	2.1	1.8	1.7	1.5	1.5	0.7	0.8	1.7	4.1	4.0	3.2	3.6	3.7	3.7	3.7	3.0	2.2	3.3	3.0	2.8	2.1	1.8	1.8	$ 6.51			$ 6.51
7/15/2018	0.4	0.4	1.1	1.2	1.1	1.2	1.1	1.2	1.1	1.1	2.0	1.9	2.3	2.2	2.3	2.3	2.2	2.0	1.8	1.9	1.9	1.7	1.5	1.7	$ 4.06			$ 4.06
7/16/2018	1.2	1.4	1.1	1.1	1.0	1.1	1.3	4.0	1.8	1.5	3.8	2.0	2.7	4.6	3.2	2.6	3.5	3.0	2.7	2.4	2.8	2.8	2.4	2.8	$ 4.62	$ 3.45		$ 8.07
7/17/2018	3.7	2.9	1.5	0.4	1.3	1.2	0.8	0.8	1.4	3.0	3.5	3.9	3.5	4.4	4.3	4.2	3.7	1.7	4.0	3.8	2.8	3.8	3.0	1.6	$ 5.17	$ 4.22		$ 9.39
7/18/2018	3.3	2.5	1.9	1.7	1.8	1.9	0.9	0.5	1.5	2.2	4.1	4.1	4.2	4.4	4.2	4.3	4.3	3.5	4.0	3.6	4.0	2.6	2.7	2.8	$ 5.57	$ 4.79		$ 10.36
7/19/2018	2.6	2.5	2.4	2.1	1.8	1.6	0.6	0.9	1.7	2.4	4.0	4.0	4.1	4.1	4.1	4.2	4.1	1.9	1.7	4.3	3.5	2.9	2.0	2.6	$ 5.39	$ 3.92		$ 9.31
7/20/2018	2.1	2.1	0.6	0.6	0.6	0.8	0.7	1.9	3.8	3.3	3.1	3.3	3.0	4.3	3.8	3.4	3.6	2.8	3.1	2.9	3.1	2.5	2.7	2.5	$ 4.86	$ 3.83		$ 8.69
7/21/2018	2.1	3.4	3.4	3.0	3.0	3.8	1.2	0.5	0.5	1.2	1.2	1.7	1.7	1.8	1.6	2.0	2.4	2.3	2.8	3.2	4.0	3.7	3.0	2.3	$ 6.06			$ 6.06
7/22/2018	1.6	0.5	0.5	0.5	0.6	0.5	2.2	1.7	2.1	2.4	2.6	3.5	4.0	3.5	3.5	3.9	4.0	2.8	2.5	2.8	4.1	3.2	4.1	1.7	$ 6.40			$ 6.40
7/23/2018	0.7	1.3	1.2	1.4	1.2	1.3	1.3	1.8	3.4	3.0	2.9	3.3	3.0	3.8	3.7	4.1	3.7	2.4	3.8	4.5	3.7	2.9	3.6	3.4	$ 5.11	$ 4.47		$ 9.58
7/24/2018	2.9	2.4	2.1	0.6	2.8	2.1	0.6	1.1	1.8	2.4	2.6	3.8	3.6	3.3	3.0	3.5	3.0	2.8	2.7	2.8	3.6	2.9	2.5	2.5	$ 5.05	$ 3.58		$ 8.63
7/25/2018	2.2	2.3	2.2	1.9	1.9	2.0	1.6	2.1	2.4	2.6	2.6	2.7	2.9	3.4	3.4	4.1	4.1	3.7	4.3	4.7	4.4	6.9	4.8	4.1	$ 6.12	$ 5.05		$ 11.17
7/26/2018	2.7	0.7	0.6	3.7	3.0	2.9	0.9	1.1	3.3	3.2	3.0	4.6	5.0	4.1	3.5	3.6	3.8	3.6	3.3	3.5	2.7	3.0	2.7	2.6	$ 5.76	$ 4.31		$ 10.06
7/27/2018	2.4	2.3	1.9	1.8	2.0	1.6	1.9	1.7	2.4	2.7	3.7	3.8	3.6	4.0	4.4	4.2	3.9	2.7	2.9	2.8	2.8	2.5	2.2	2.7	$ 5.45	$ 4.00		$ 9.45
7/28/2018	2.3	2.2	2.2	2.0	2.1	2.3	2.2	2.0	1.9	2.6	2.6	4.5	3.3	3.8	3.7	3.8	3.4	6.1	4.0	3.1	3.1	2.0	0.8	2.1	$ 7.40			$ 7.40
7/29/2018	1.9	1.8	1.4	1.7	1.2	1.2	1.7	1.4	1.5	1.9	1.9	2.3	2.1	2.4	2.9	3.4	3.3	2.9	3.1	3.6	3.7	3.2	2.3	2.1	$ 5.93			$ 5.93
7/30/2018	1.8	1.7	1.3	1.4	1.8	1.6	1.6	1.8	1.6	2.0	2.4	3.4	4.0	3.2	3.7	3.3	3.5	3.6	3.8	3.0	4.0	4.1	3.0	2.2	$ 5.05	$ 4.17		$ 9.23
7/31/2018	2.8	1.9	1.7	1.9	1.8	1.4	0.9	0.5	1.2	1.8	1.7	2.3	2.8	3.7	3.2	3.2	3.7	2.7	4.4	4.5	3.4	2.8	4.2	2.6	$ 4.61	$ 4.48		$ 9.10

Date	0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300			
7/1/2019	2.3	2.0	1.9	1.8	1.6	1.5	1.7	1.8	2.2	3.1	3.4	4.3	4.1	4.2	4.3	1.7	1.6	1.7	1.7	1.6	4.0	3.3	2.7	2.3	$ 2.75	$ 0.71	
7/2/2019	1.8	1.8	1.3	1.4	1.2	1.3	1.8	1.7	2.3	2.3	2.5	4.2	6.6	4.9	4.3	0.9	1.2	1.7	1.8	1.7	4.3	4.7	2.7	2.2	$ 2.78	$ 0.62	
7/3/2019	1.9	1.5	1.5	1.3	1.6	1.2	1.7	2.5	2.2	1.9	2.1	3.9	3.9	4.1	4.1	1.6	1.5	1.5	1.6	1.5	3.7	2.7	2.3	1.9	$ 2.40	$ 0.67	
7/4/2019	2.2	1.7	1.4	1.3	1.4	1.4	1.6	2.4	2.7	3.0	4.2	5.1	4.1	1.7	2.3	1.6	3.3	2.9	3.6	3.3	2.6	2.4	2.2	2.0	$ 3.17		
7/5/2019	1.9	1.5	1.5	1.3	1.6	1.2	1.7	2.5	2.2	1.9	2.1	3.9	3.9	4.1	4.1	1.6	1.5	1.5	1.6	1.5	3.7	2.7	2.3	1.9	$ 2.40	$ 0.67	
7/6/2019	4.7	2.0	1.5	1.3	1.3	1.2	1.3	1.7	2.8	3.6	4.4	2.6	2.6	3.2	2.8	3.1	3.2	3.1	3.2	3.1	2.9	2.9	3.0	3.8	$ 3.40		
7/7/2019	1.5	2.1	2.3	2.0	1.8	1.6	1.7	1.6	1.9	2.1	2.5	2.7	2.9	3.1	4.8	3.5	3.5	3.2	3.6	3.1	2.7	2.5	3.0	2.0	$ 3.22		
7/8/2019	2.2	1.6	1.9	1.4	1.3	1.3	1.4	1.8	1.9	2.5	2.5	4.1	4.1	4.1	5.2	2.5	1.8	1.7	1.6	1.5	2.8	2.0	1.8	2.2	$ 2.40	$ 0.79	
7/9/2019	1.6	1.2	1.2	0.9	1.1	0.9	1.2	1.3	1.9	2.7	3.7	3.9	4.1	4.1	4.2	1.6	1.6	1.6	1.5	1.6	3.7	2.6	2.2	2.1	$ 2.31	$ 0.69	
7/10/2019	1.7	1.5	1.5	1.3	1.0	1.1	1.2	1.4	1.6	2.2	2.3	4.1	4.2	4.2	5.8	2.0	1.6	1.7	1.6	1.6	4.1	3.0	2.6	2.3	$ 2.46	$ 0.74	
7/11/2019	1.7	1.5	1.6	1.5	0.9	1.4	1.4	1.4	1.9	1.8	2.4	4.2	4.5	4.4	4.1	1.5	2.8	1.8	1.5	1.6	3.7	3.1	2.2	2.5	$ 2.40	$ 0.79	
7/12/2019	2.0	1.8	1.8	1.6	2.0	1.5	1.5	2.0	1.5	1.5	2.3	3.9	4.5	4.7	4.1	1.6	1.6	1.7	1.6	1.6	4.2	3.0	3.3	2.6	$ 2.60	$ 0.69	
7/13/2019	2.5	2.0	2.4	2.2	1.5	1.7	1.7	1.6	2.1	2.5	2.6	3.0	3.1	3.7	3.5	3.5	3.9	3.5	3.5	3.3	2.7	2.9	2.7	3.0	$ 3.40		
7/14/2019	2.2	2.1	2.3	2.0	2.1	1.5	1.5	1.7	1.6	2.2	2.1	2.4	3.0	3.8	3.2	4.0	4.7	3.6	3.9	3.6	3.3	3.0	2.6	2.2	$ 3.38		
7/15/2019	2.3	1.8	2.1	1.6	1.9	1.7	2.0	2.2	2.4	2.9	3.0	4.1	4.2	4.4	4.3	1.6	1.6	1.6	1.6	1.4	4.1	4.0	3.4	2.3	$ 2.84	$ 0.68	
7/16/2019	2.2	1.8	1.8	1.8	1.4	1.4	1.4	1.6	1.9	2.2	2.4	4.1	5.0	5.5	4.5	1.7	1.7	1.7	1.6	1.7	4.2	3.1	3.2	2.8	$ 2.73	$ 0.73	
7/17/2019	2.1	1.9	1.6	1.5	1.5	1.6	1.7	1.8	2.1	2.3	2.3	4.1	4.6	5.5	4.0	1.6	1.7	1.5	1.6	1.7	5.6	3.6	3.4	2.6	$ 2.80	$ 0.70	
7/18/2019	2.1	1.5	1.4	1.4	1.2	1.4	1.3	1.9	1.9	2.0	2.2	4.0	4.0	4.1	4.1	1.4	1.4	1.5	1.6	1.5	4.2	3.1	2.3	2.5	$ 2.42	$ 0.64	
7/19/2019	2.1	2.0	1.8	1.5	1.6	1.7	1.6	1.3	1.8	2.0	2.2	4.0	4.1	4.1	4.1	1.5	1.5	1.6	1.6	1.6	3.6	2.9	2.6	2.0	$ 2.46	$ 0.68	
7/20/2019	1.9	2.1	1.2	1.4	1.5	0.9	1.5	1.6	2.4	2.5	2.5	2.6	2.8	4.0	4.2	3.3	2.6	2.9	3.5	2.8	3.0	2.8	2.5	2.4	$ 3.08		
7/21/2019	1.9	2.1	1.2	1.9	1.9	1.7	2.1	3.0	2.8	2.8	3.1	3.4	3.3	3.3	3.8	3.6	4.3	3.8	3.6	3.6	3.7	3.5	3.1	3.1	$ 3.68		
7/22/2019	2.8	2.6	3.0	2.6	2.5	2.1	1.8	2.0	2.0	2.5	2.6	4.2	4.7	4.6	4.3	1.6	1.5	1.6	1.5	1.4	3.3	2.9	2.5	2.2	$ 2.88	$ 0.66	
7/23/2019	1.8	1.6	1.5	1.4	1.6	1.7	1.3	1.2	1.6	2.2	2.1	4.0	4.6	5.4	6.2	2.1	1.6	1.5	1.5	1.7	4.3	3.5	2.7	3.6	$ 2.73	$ 0.71	
7/24/2019	2.4	2.4	1.6	2.1	1.5	1.6	1.5	1.2	1.5	1.4	1.3	3.5	3.5	2.5	4.6	1.7	1.7	1.6	1.5	1.7	3.7	2.9	2.4	3.1	$ 2.33	$ 0.72	
7/25/2019	2.8	2.1	1.6	1.4	1.5	1.5	1.6	2.0	1.8	2.4	2.6	4.1	4.1	4.1	4.1	1.5	1.6	1.7	1.7	1.7	4.2	3.6	3.5	2.7	$ 2.72	$ 0.72	
7/26/2019	1.8	1.6	1.5	1.4	1.6	1.7	1.3	1.2	1.6	2.2	2.1	4.0	4.6	5.4	6.2	2.1	1.6	1.5	1.5	1.7	4.3	3.5	2.7	3.6	$ 2.73	$ 0.71	
7/27/2019	1.9	2.1	1.2	1.4	1.5	0.9	1.5	1.6	2.4	2.5	2.5	2.6	3.5	3.5	3.6	3.7	3.9	3.8	3.4	3.3	3.2	3.5	2.9	2.7	$ 3.29		
7/28/2019	2.0	2.0	1.6	1.6	1.6	1.6	1.5	1.9	1.8	2.6	3.3	3.0	3.3	3.3	4.1	4.1	4.3	4.6	5.3	3.3	3.2	3.0	2.9	2.4	$ 3.57		
7/29/2019	2.5	2.1	1.7	1.5	1.8	1.5	1.4	1.7	2.0	2.1	2.5	4.1	4.2	4.1	4.2	1.6	1.7	1.8	1.6	1.6	5.4	3.7	3.0	2.5	$ 2.70	$ 0.72	
7/30/2019	2.3	2.6	2.2	1.8	1.8	1.9	1.6	1.7	1.5	1.8	2.5	4.2	4.5	5.5	4.8	1.8	1.7	1.5	1.6	1.6	4.1	3.2	2.6	1.9	$ 2.74	$ 0.71	
7/31/2019	2.2	1.6	1.5	1.1	1.5	1.5	1.4	1.4	1.4	1.4	2.1	3.8	3.8	4.5	4.4	1.5	1.5	1.5	1.6	1.6	3.4	2.7	2.2	2.3	$ 2.31	$ 0.67	$ 48.48

Results

- HP Plus was to be implemented early spring; full implementation has been delayed
- Limited participation to start
  - Pilot with top contractors
- Exciting results to date on the cases we have been able to implement
- Too early for documented results.

AZ Home Performance with ENERGY STAR

Maddie Koewler

National Association of State Energy Officials (NASEO)

U.S. DEPARTMENT OF ENERGY

National Association of State Energy Officials

Equity in State Energy Office Programs and Policies

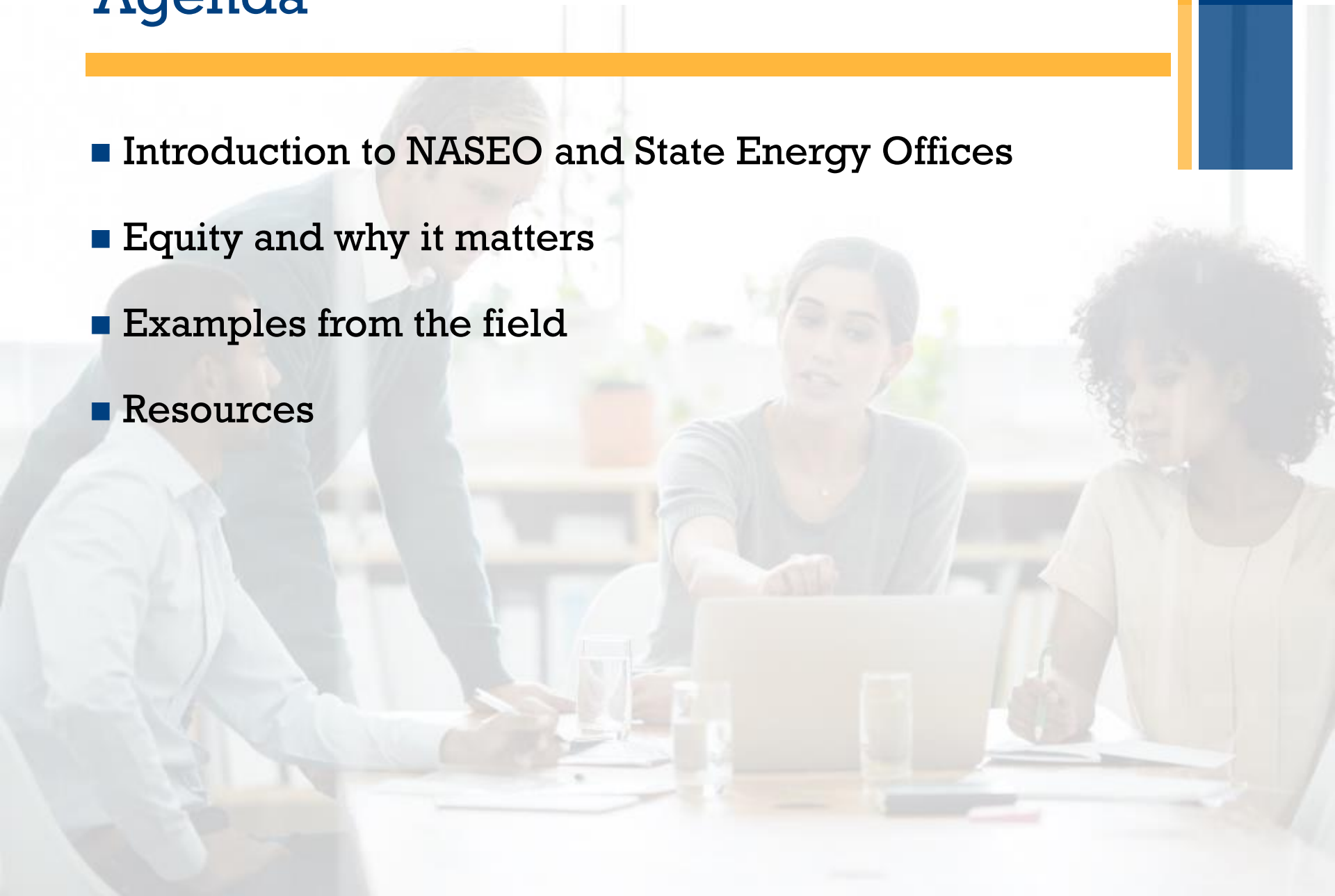
Maddie Koewler

Better Buildings Residential Network Peer Exchange Call

August 13, 2020

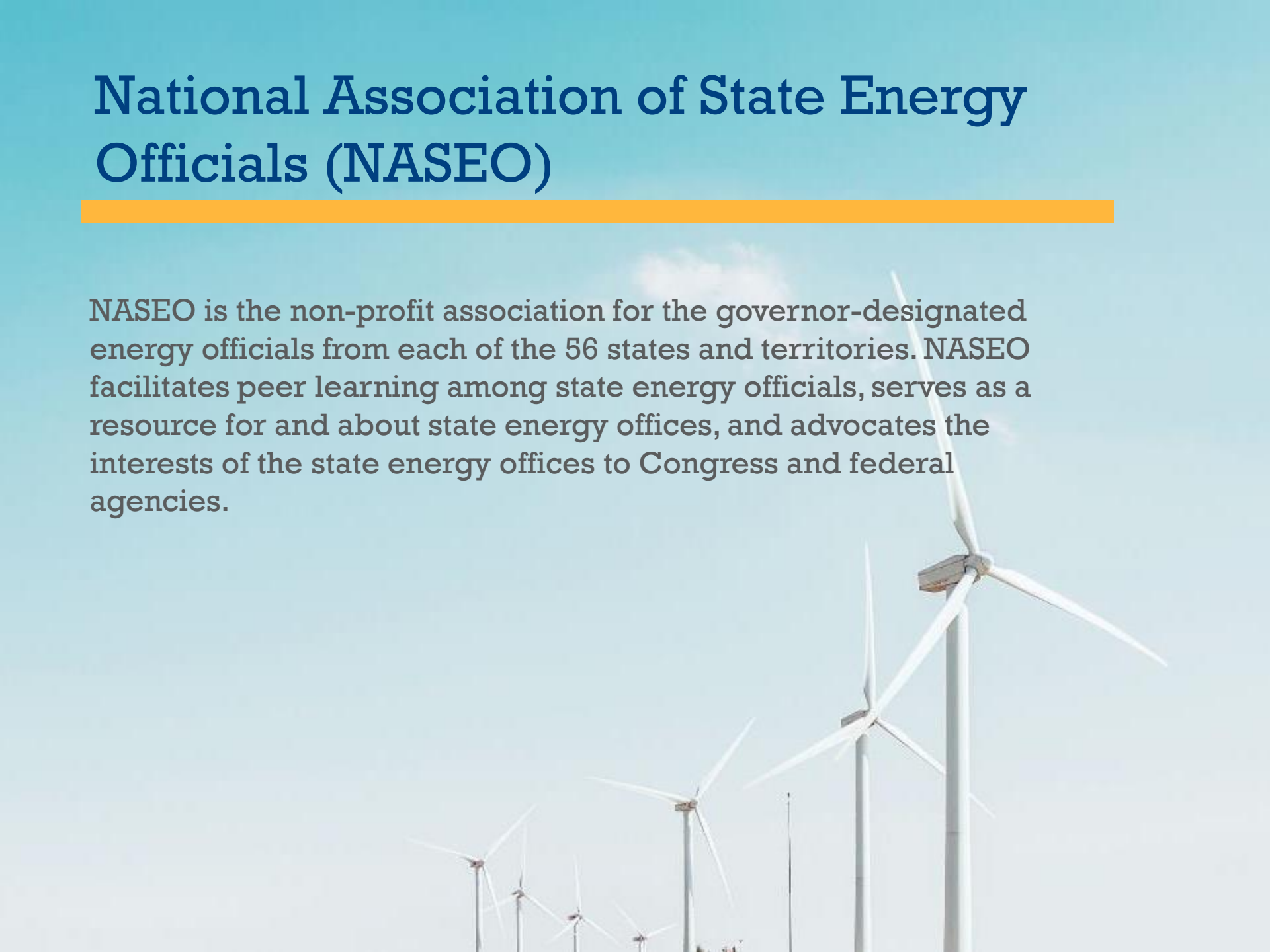
Agenda

- Introduction to NASEO and State Energy Offices
- Equity and why it matters
- Examples from the field
- Resources



National Association of State Energy Officials (NASEO)

NASEO is the non-profit association for the governor-designated energy officials from each of the 56 states and territories. NASEO facilitates peer learning among state energy officials, serves as a resource for and about state energy offices, and advocates the interests of the state energy offices to Congress and federal agencies.



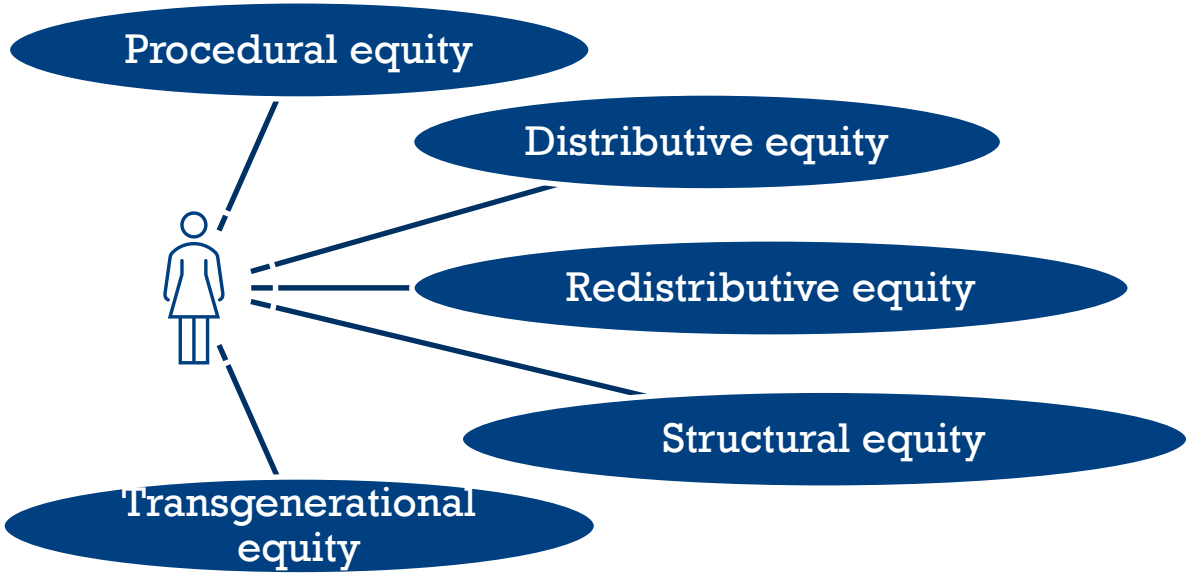
State Energy Offices

- Advise governors and legislators
- Implement energy efficiency, renewable energy, and financing programs.
- Assist during energy emergencies
- Demonstrate emerging technologies
- Work to reduce public facility energy and water consumption

Why is equity important?

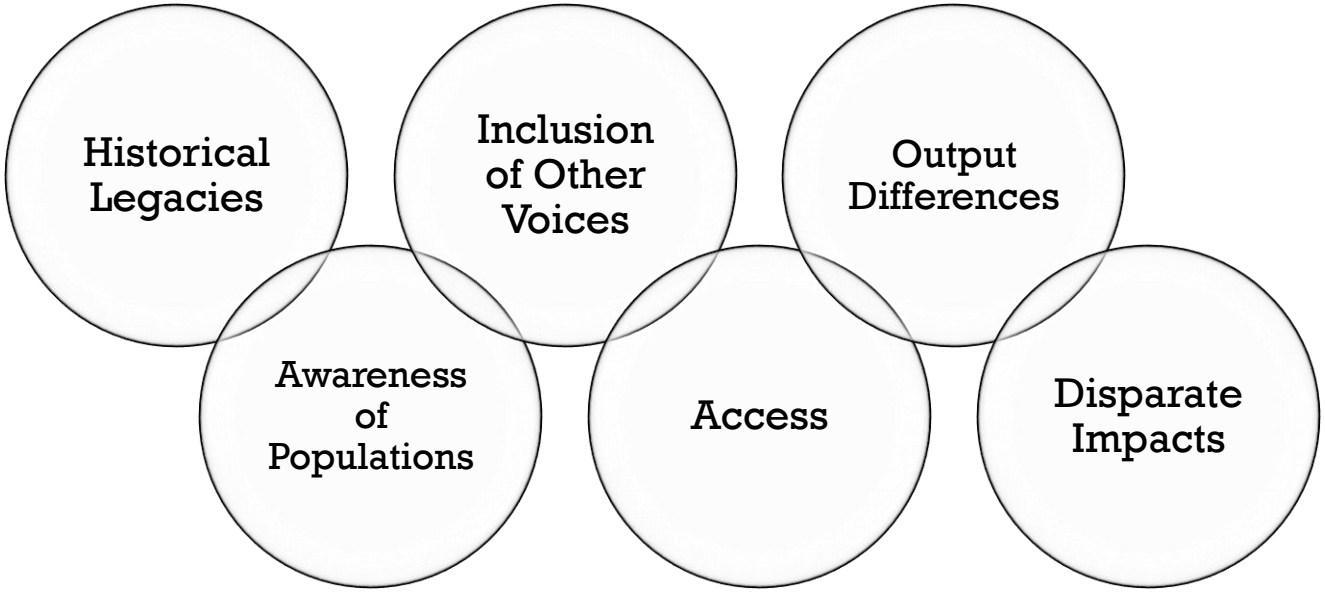
The current systems that prevent full participation in programs and policies continue without concerted effort to change them.

What does equity look like?



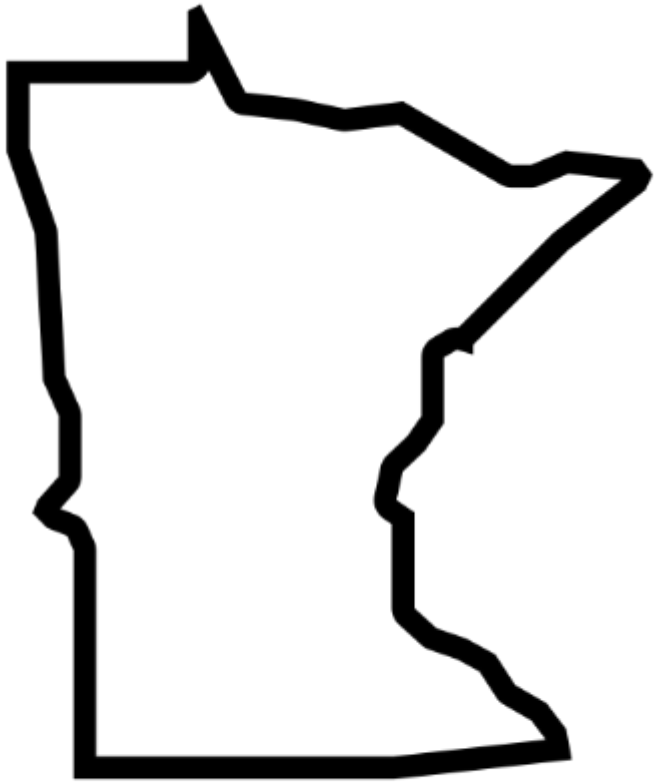
Further reading: *A Guidebook on Equitable Clean Energy Program Design for Local Governments and Partners* (Urban Sustainability Directors Network and Cadmus)

Understanding equity in your community



Further reading: *The State of Equity Measurement: A Review of Energy-Efficiency Programs* (Urban Institute and Green & Healthy Homes Initiative)

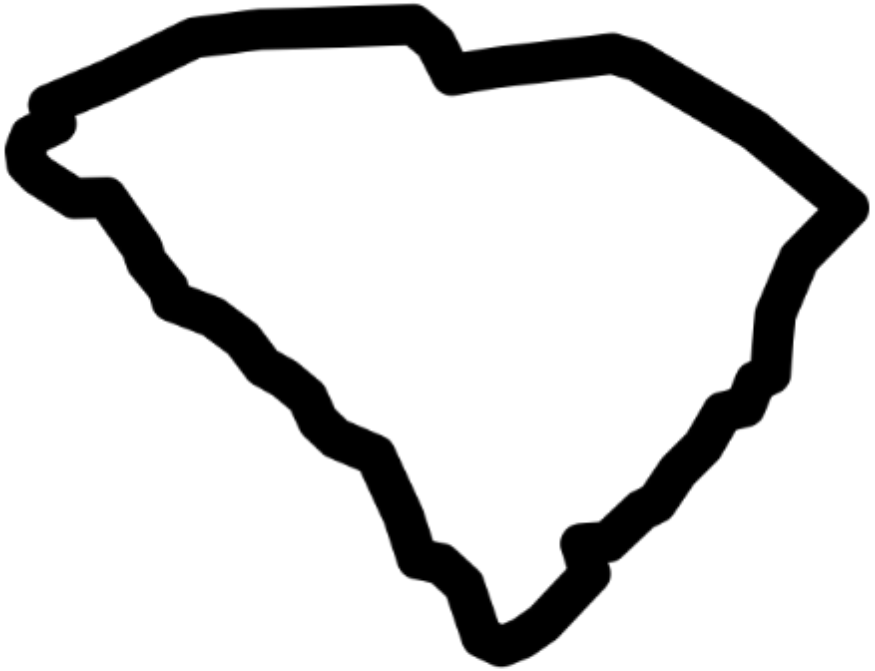
Examples from State Energy Offices



Created by Lluisa Iborra
from Noun Project

Further reading: *The Spectrum of Community Engagement to Ownership* (Facilitating Power)

Examples from State Energy Offices



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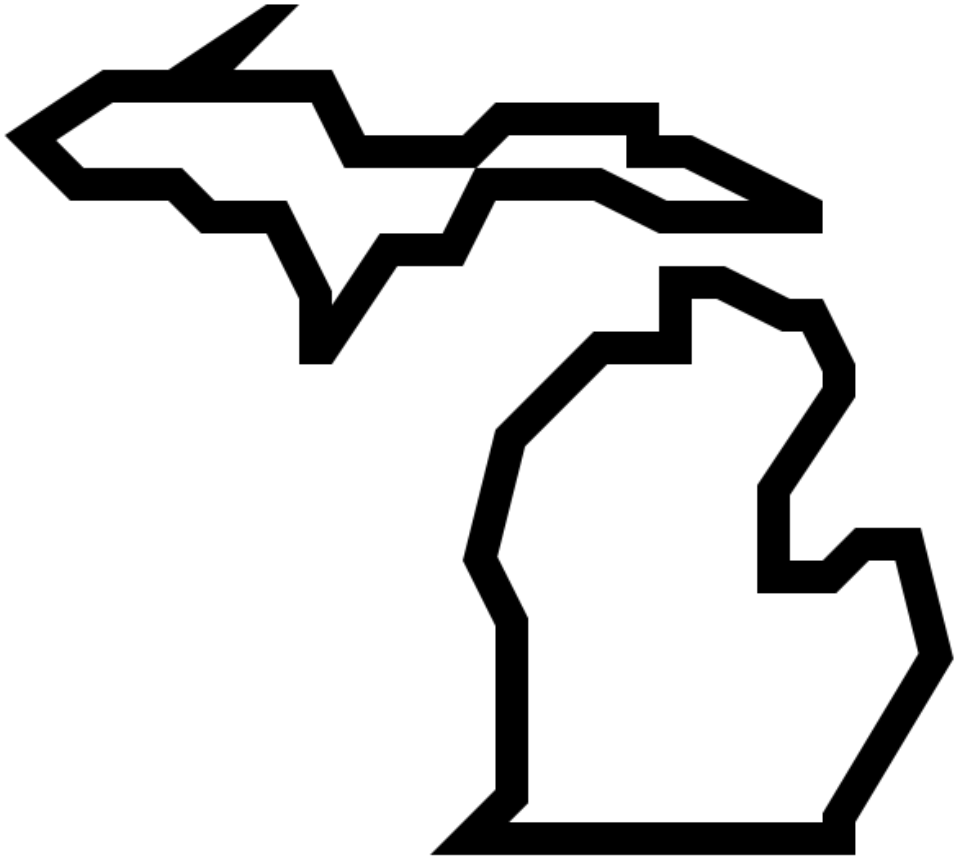
Examples from State Energy Offices



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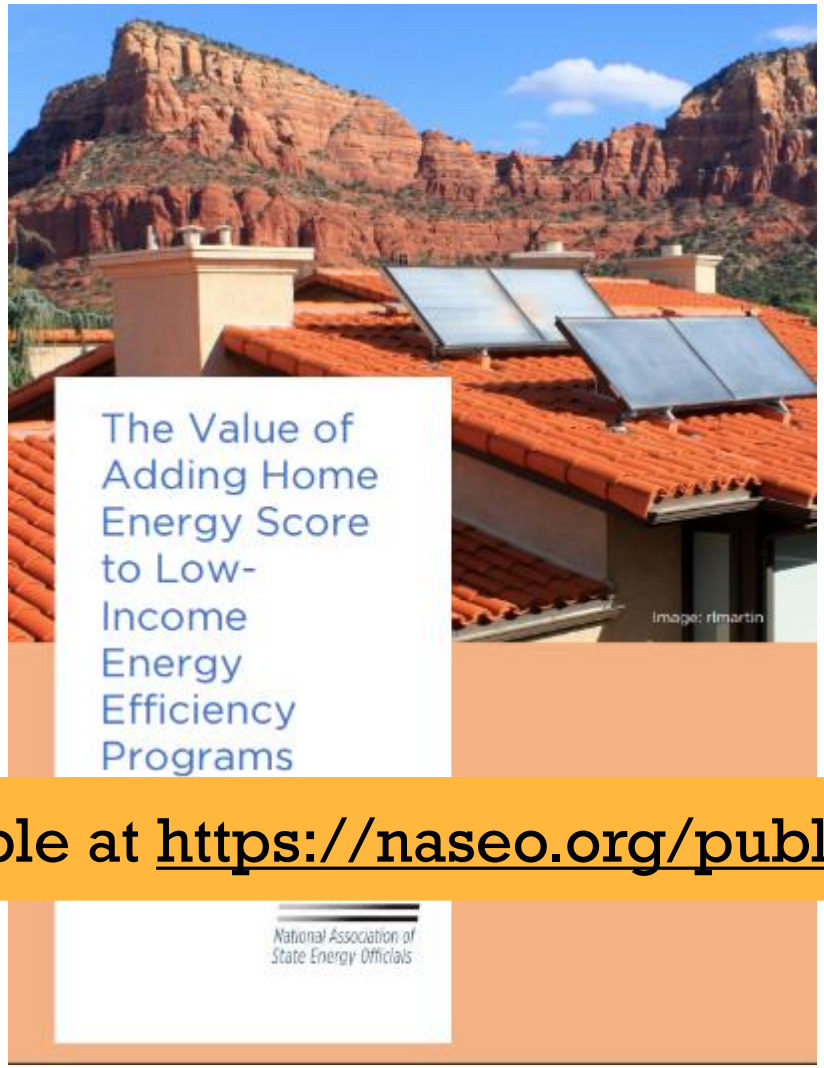
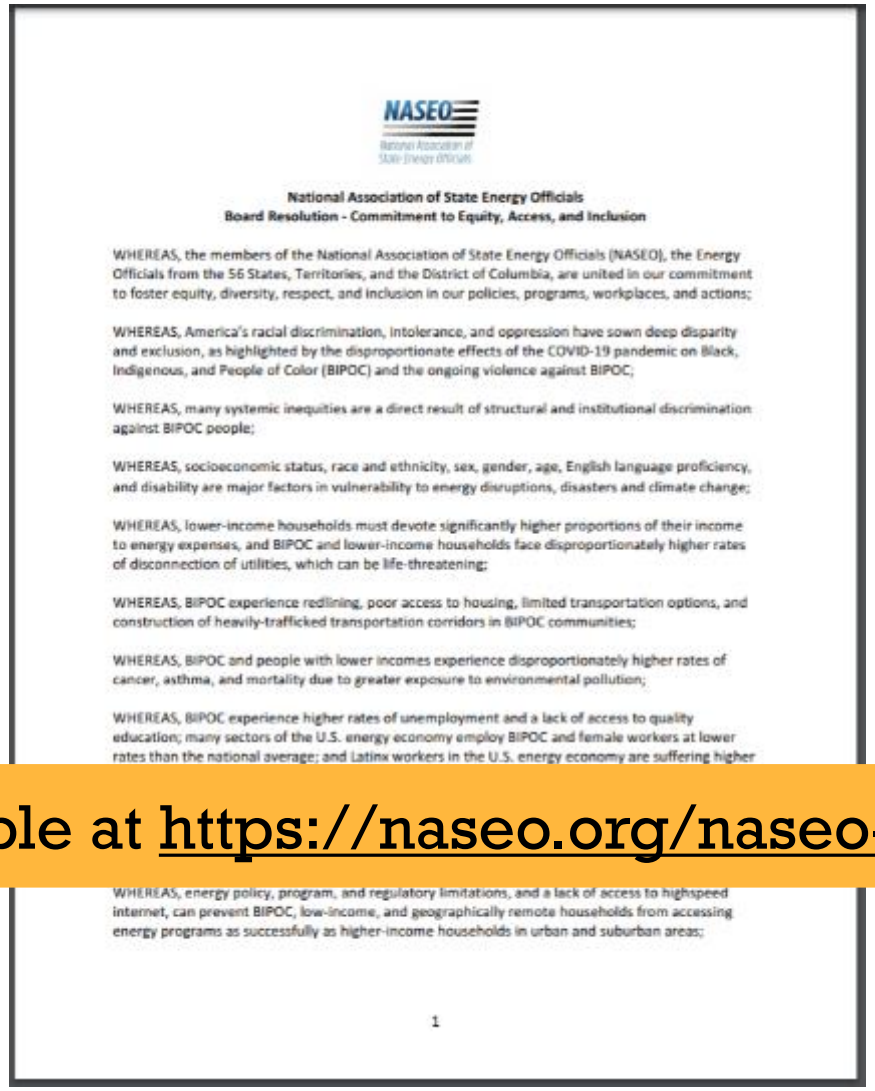
Resources



Available at https://naseo.org/publications

Resources



National Association of State Energy Officials
Board Resolution - Commitment to Equity, Access, and Inclusion

WHEREAS, the members of the National Association of State Energy Officials (NASEO), the Energy Officials from the 56 States, Territories, and the District of Columbia, are united in our commitment to foster equity, diversity, respect, and inclusion in our policies, programs, workplaces, and actions;

WHEREAS, America's racial discrimination, intolerance, and oppression have sown deep disparity and exclusion, as highlighted by the disproportionate effects of the COVID-19 pandemic on Black, Indigenous, and People of Color (BIPOC) and the ongoing violence against BIPOC;

WHEREAS, many systemic inequities are a direct result of structural and institutional discrimination against BIPOC people;

WHEREAS, socioeconomic status, race and ethnicity, sex, gender, age, English language proficiency, and disability are major factors in vulnerability to energy disruptions, disasters and climate change;

WHEREAS, lower-income households must devote significantly higher proportions of their income to energy expenses, and BIPOC and lower-income households face disproportionately higher rates of disconnection of utilities, which can be life-threatening;

WHEREAS, BIPOC experience redlining, poor access to housing, limited transportation options, and construction of heavily-trafficked transportation corridors in BIPOC communities;

WHEREAS, BIPOC and people with lower incomes experience disproportionately higher rates of cancer, asthma, and mortality due to greater exposure to environmental pollution;

WHEREAS, BIPOC experience higher rates of unemployment and a lack of access to quality education; many sectors of the U.S. energy economy employ BIPOC and female workers at lower rates than the national average; and Latinx workers in the U.S. energy economy are suffering higher

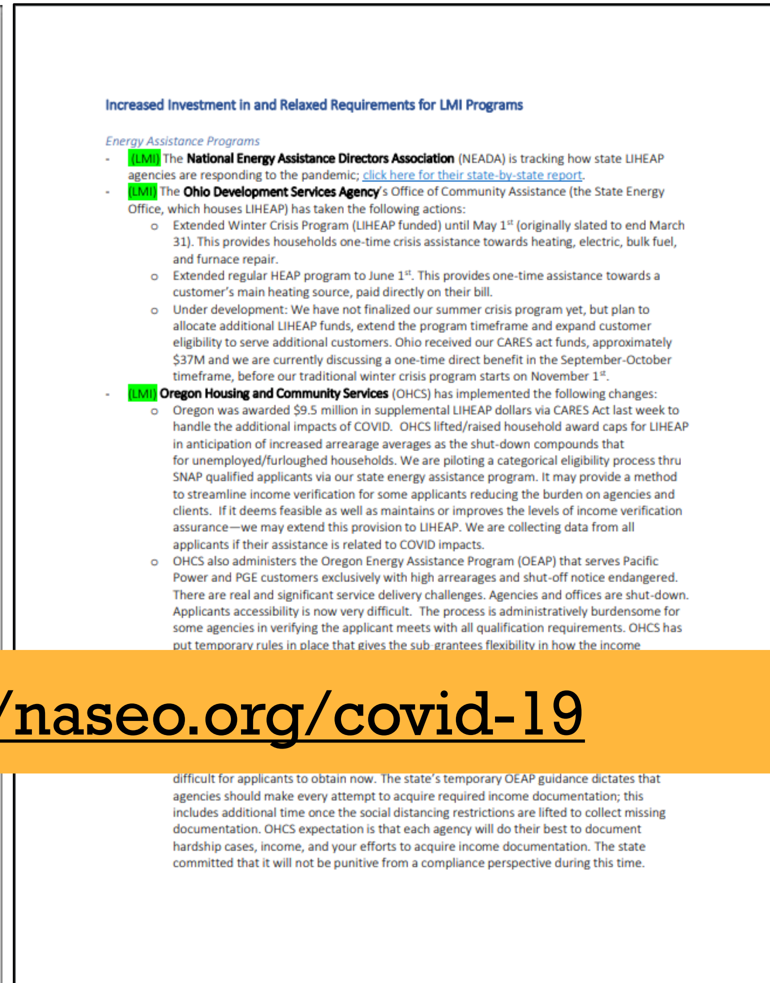
WHEREAS, energy policy, program, and regulatory limitations, and a lack of access to highspeed internet, can prevent BIPOC, low-income, and geographically remote households from accessing energy programs as successfully as higher-income households in urban and suburban areas;

1

Available at https://naseo.org/naseo-policy

Resources

NASEO Energy Equity Taskforce – Peer Exchange Findings
Mitigating Utility Bill Impacts for LMI Households in COVID-19
Last Update: May 26, 2020



Increased Investment in and Relaxed Requirements for LMI Programs

Energy Assistance Programs

- (LMI) The **National Energy Assistance Directors Association** (NEADA) is tracking how state LIHEAP agencies are responding to the pandemic; click here for their state-by-state report.
- (LMI) The **Ohio Development Services Agency**'s Office of Community Assistance (the State Energy Office, which houses LIHEAP) has taken the following actions:
  - Extended Winter Crisis Program (LIHEAP funded) until May 1st (originally slated to end March 31). This provides households one-time crisis assistance towards heating, electric, bulk fuel, and furnace repair.
  - Extended regular HEAP program to June 1st. This provides one-time assistance towards a customer's main heating source, paid directly on their bill.
  - Under development: We have not finalized our summer crisis program yet, but plan to allocate additional LIHEAP funds, extend the program timeframe and expand customer eligibility to serve additional customers. Ohio received our CARES act funds, approximately $37M and we are currently discussing a one-time direct benefit in the September-October timeframe, before our traditional winter crisis program starts on November 1st.
- (LMI) **Oregon Housing and Community Services** (OHCS) has implemented the following changes:
  - Oregon was awarded $9.5 million in supplemental LIHEAP dollars via CARES Act last week to handle the additional impacts of COVID. OHCS lifted/raised household award caps for LIHEAP in anticipation of increased arrearage averages as the shut-down compounds that for unemployed/furloughed households. We are piloting a categorical eligibility process thru SNAP qualified applicants via our state energy assistance program. It may provide a method to streamline income verification for some applicants reducing the burden on agencies and clients. If it deems feasible as well as maintains or improves the levels of income verification assurance—we may extend this provision to LIHEAP. We are collecting data from all applicants if their assistance is related to COVID impacts.
  - OHCS also administers the Oregon Energy Assistance Program (OEAP) that serves Pacific Power and PGE customers exclusively with high arrearages and shut-off notice endangered. There are real and significant service delivery challenges. Agencies and offices are shut-down. Applicants accessibility is now very difficult. The process is administratively burdensome for some agencies in verifying the applicant meets with all qualification requirements. OHCS has put temporary rules in place that gives the sub grantees flexibility in how the income

difficult for applicants to obtain now. The state's temporary OEAP guidance dictates that agencies should make every attempt to acquire required income documentation; this includes additional time once the social distancing restrictions are lifted to collect missing documentation. OHCS expectation is that each agency will do their best to document hardship cases, income, and your efforts to acquire income documentation. The state committed that it will not be punitive from a compliance perspective during this time.

Available at https://naseo.org/covid-19

Resources

Designing Equity-Focused Stakeholder Engagement to Inform State Energy Office Programs and Policies

Coming soon!

Maddie Koewler
mkoewler@naseo.org

NASEO
National Association of State Energy Officials

Explore the Residential Program Solution Center

Resources to help improve your program and reach energy efficiency targets:

- Handbooks - explain *why* and *how* to implement specific stages of a program.
- Quick Answers - provide answers and resources for common questions.
- Proven Practices posts - include lessons learned, examples, and helpful tips from successful programs.
- Technology Solutions NEW! - present resources on advanced technologies, **HVAC** & **Heat Pump Water Heaters**, including installation guidance, marketing strategies, & potential savings.

https://rpsc.energy.gov

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